L 9277-66

ACC NR: AP5027475

to follow pO_2 rather closely. Hypocapnia tends to develop at a 4-km "elevation" breathing air and at a 20-km "elevation" with an intrapulmonary pressure of 150 mm Hg, but "elevation" to 10 km with a 100% oxygen atmosphere and to 20 km with an intrapulmonary pressure of 200 mm Hg did not produce hypocapnia. It is therefore concluded that hypocapnia is the result of a hypoxic condition, and is related neither to reduced atmosphere nor to intrapulmonary pressure change per se. Orig. art. has: 2 tables. [BM]

SUB CODE: 06/ SUBM DATE: 04Jun64/ ORIG REF: 005/ OTH REF: 001/ ATD PRESS: 4158

Card 2/2

AGAIDZHANYAN, N.A., mayor med.sluzhby; VAKAR, M.I., podpolkovnik med.sluzhby; TSIVILASHVILI, A.S., mayor med.sluzhby; MALKIN, V.B.; CHERNYAKOV, I.N., kapitan med.sluzhby

Reaction of the human cardiovascular system during hypoxia. Voen.-med.zhur. no.2:65-69 F '60. (MIRA 13:5)
(ANOXEMIA physiology)
(CARDIOVASCULAR SYSTEM physiol.)

CHERNYAKOV, I.N.

Effect of muscular work on the restoration of conditioned reflex activity in dogs. Zhur. vys. nerv. deiat. 10 no.2:231-235 Mr-Ap '60. (MIRA 14:5)

1. Military Medical Faculty, Medical Institute, Saratov.
(CONDITIONED RESPONSE) (EXERCISE)

27.2100
17.2150

32557
S/177/61/000/006/002/003
D298/D305

AUTHORS: Agadzhanyan, N.A., Major, Medical Corps, Candidate of Medical Sciences, Vakar, M.I., Colonel, Medical Corps, Candidate of Medical Sciences, Smirnov, V.A., Major, Medical Corps, and Chernyakov, I.N., Major, Medical Corps, Candidate of Medical Sciences

TITLE: Change in pulmonary ventilation with excess pressure respiration at high altitudes

PERIODICAL: Voyenno-meditsinskiy zhurnal, no. 6, 1961, 58-61

TEXT: The authors developed a special device and method for determining pulmonary ventilation in a pressure chamber. A.I. Shaposhnikov, a Lieutenant-Colonel in the Engineering Branch, assisted the authors in devising the method. The device (see figure) consists of a mask (1) giving an airtight seal with the face, a gas meter (6) fitted in an airtight case, tubes connecting the mask with the meter, and valves for controlling the direction of the oxygen flow in the system. During

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Change in pulmonary ...

excess pressure respiration oxygen passes from the oxygen apparatus (12) along the tube (10) through the valve (8) and into the space within the helmet. When the subject inhales, it then passes through the valve (2) under the mask and into the lungs. From the lungs the air enters the gas meter through the tubes (3 and 4), and from the meter it passes through the tube (7) and valve (9) into the atmosphere. With this arrangment no exhaled air escapes from the system without passing through the meter and no oxygen passes inadvertently through the same meter. Oxygen which enters the space within the helmet during the exhalation phase is released into the atmosphere through valves (1E) and (9), by-passing the meter. Valves (5) and (11) close during inhalation and prevent air from the tubes and gas meter from entering the space within the helmet. The positioning of the gas meter before the exhalation valve (9) ensures that the pressure in the lungs and the pressure in the gas meter are practically equal. This enables the absolute values of pulmonary ventilation to be determined immediately without prior calculations reducing the pressure of the air passing through the gas meter to the pressure in the lungs. Control experiments showed that under normal

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Change in pulmonary ...

conditions the pulmonary ventilation readings recorded by this method coincided with the readings of commonly-accepted methods. Experiments with excess pressure respiration were conducted with 6 healthy men aged 20-23. Apart from pulmonary ventilation, the rate and amplitude of the respiratory movements, the chest circumference and the pressure exerted on the body by a high-altitude compensating suit were recorded. The tests were conducted at normal pressure ("on the ground") and at an increased pressure of 105 mm Hg ("at high altitude"). The results of the tests are given in tabular form and show that in persons who took well to excess pressure respiration pulmonary ventilation "on the ground" and "at high altitude" was maintained at close to the original level. In almost all cases, however, the volume of respiration under excess pressure was reduced by 50-60% of the original level. With such a reduction, adequate pulmonary ventilation could only be obtained by an increase in the rate of respiration, a phenomenon which was observed in the tests (an increase of 3-13 respirations a minute). These findings disagree with those of A.G. Kuznetsov (1960), who noted a considerable increase in pulmonary ventilation under excess pressure respiration,

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Change in pulmonary ...

mainly by an increase in the depth of the respiratory movements and, consequently, an increase in the volume of respiration. These results, however, were obtained in respiration at an excess pressure of 15-25 mm Hg and without the use of compensating clothing. With increased pressure, the material of the compensating suit became harder. This led to an increased pressure on the body, especially in the thoracic and abdominal regions, during the inhalation phase, and a reduction of suit pressure during exhalation, whereas for free respiration the opposite should be the case. The pressure difference between the respiration phases sometimes reached 40-60 mm Hg or more. Under normall conditions chest expansion during respiration was 0.6-1.2 cm, whereas under excess pressure respiration it comprised a mere 0.2-0.4 cm. This reduction in the amplitude of the respiratory movements naturally led to a reduction in the volume of respiration. The authors conclude that, in addition to their basic function of compensating for increased pressure in the lungs, high-altitude suits also give rise to factors that complicate respiration and blood circulation. The authors' observations took no account of the

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AGADZHANYAN, N.A. (Moskva); VAKAR, M.I. (Moskva); SMIRNOV, V.A. (Moskva); CHERNYAKOV, I.N. (Moskva); SHAPOSHNIKOV, A.I. (Moskva)

Method of measuring pulmonary ventilation in respiration under increased pressure at high altitudes. Fiziol. zhur. 47 no.6: 778-780 Je '61. (MIRA 15:1)
(RESPIRATION) (ALTITUDE, INFLUENCE OF)

ACCESSION NR: AT4042690 S/0000/63/000/000/0259/0261

AUTHOR: Kovalenko, Ye. A.; Popkov, V. L.; Chernyakov, I. N.

TITLE: Effect of breathing oxygen during excess g-loads on the oxygenation of the brain

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy* konferentsii. Moscow, 1963, 259-261

TOPIC TAGS: acceleration stress, oxygen atmosphere, oxygen tension, brain tissue, dog

ABSTRACT: Experiments were performed for the purpose of studying oxygen tension dynamics in brain tissues during acceleration stress while breathing air and oxygen. Experiments were performed on dogs with electrodes permanently implanted into their brain tissues. Oxygen tension was determined by polarographic method and expressed in relative magnitudes. At the

ACCESSION NR: AT4042690

same time, EKG, EEG, and pneumograms were recorded. Animals were subjected to accelerations of 2--12 g for periods of 1--3 min. Longitudinal as well as transverse accelerations were employed. The experiments performed indicate that during prolonged action of acceleration, the oxygenation of the tissues of the brain is always reduced, particularly during longitudinal accelerations in the head-pelvis position. This makes it possible to assume that in pathogenic changes induced by accelerations, hypoxia of the brain plays a significant role. This is confirmed by the fact that during action of acceleration up to 10 g, breathing oxygen tends to maintain the oxygen tension in brain tissues on a nearly normal level, significantly increasing tolerance to acceleration stress. At the same time, the relatively serious changes in the organism caused by acceleration stress, even when oxygen tension in brain tissues is maintained by breathing pure oxygen, indicate the presence of other factors in the pathogenic picture induced by acceleration stress.

ASSOCIATION: none

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ACCESSION NR: AT4042690

SUBMITTED: 27Sep63 ENCL: 00 SUB CODE: LS

NO REF SOV: 000 OTHER: 000

Card 3/3

KOVALENKO, Ye.A.; POPKOV, V.L.; CHERNYAKOV, I.N. (Moskva)

Cerebral hypoxia during overloading under conditions of oxygen breathing. Pat. fiziol. eksp. ter. 7 no.5:9-15 S-O'63
(MIRA 17:2)

KOVALENKO, Ye.A. (Moskva); POPKOV, V.L. (Moskva); CHERNYAKOV, I.N. (Moskva).

Cerebral hypoxia caused by gravitational overstress in the cephalopelvic direction. Fiziol. zh. SSSR Sechenov 49 no.6: 719-724 '63 (MIRA 17:1)

KOVALENKO, Ye.A.; POPKOV, V.L.; CHERNYAKOV, I.N.

Intravital study of oxygen tension in brain tissues during prolonged accelerations. Biul.eksp.biol. i med. 55 no.1: 43-48 Ja'63. (MIRA 16:7)

1. Predstavlena deystvitel'nym chlenom AMN SSSR V.V.Parinym.
(ANOXEMIA) (BRAIN)
(ACCELERATION—PHYSIOLOGICAL EFFECT).

KOVALENKO, Ye.A.; POPKOV, V.L.; CHERNYAKOV, I.N. (Moskva)

Effect of increased carbon dioxide concentration on hypoxia of cerebral tissues. Pat. fiziol. i eksp. terap. no.2:50-54 '64. (MIRA 17:9)

ACCESSION NR: AP4017134 S/0239/64/050/002/0236/0240

AUTHOR: Balakovski, I. S. (Balakhovskiy, I. S., Moscow); Dolgo-Saburov, V. B. (Moscow); Popkov, V. I. (Moscow); Tcherniakov, I. N. (Chernyakov, I. N., Moscow)

TITLE: Use of a flow oxyhemometer under acute experimental conditions

SOURCE: Fiziologicheskiy zhurnal SSSR, v. 50, no. 2, 1964, 236-240

TOPIC TAGS: oxyhemometer, flow oxyhemometer PO-1, blood oxygenation change, rarified atmosphere, hemoglobin spectral property, hemoglobin reflected light, excessive oxygen pressure, external body counterpressure

ABSTRACT: The oxyhemometric method based on determination of hemoglobin spectral properties enables an experimenter to investigate the dynamics of blood oxygenation at a distance. This is especially important in rarified atmosphere tests with a pressure chamber. Flow oxyhemometer PO-1 measures oxygen saturation of the blood as it passes through a glass cuvette by the amount of light the hemoglobin reflects rather than by the amount of light passing through as in

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ACCESSION NR: AP4017134

other oxyhemometers. The PO-1 consists of an illuminating light, focusing device, filter, cuvette, photoelements, and a recorder. Light wavelengths of less than 800 mmk (red rays) should be used because hemoglobin absorbs more light in this spectral region than oxyhemoglobin. Light wavelengths of more than 800 mmk (close to infrared rays) should be used for oxyhemoglobin. These two spectral regions are well defined by the special photoelements so that dependence of total light flow on degree of blood oxygenation can be found. This type of oxyhemometer has been successfully used in experiments with gas mixture and oxygen respiration under normal and simulated altitude conditions. EKG, pneumogram, and EMG of respiratory muscles can be recorded at the same time as the oxyhemogram. Experimental oxyhomogram data indicate that excessive oxygen (or gas mixture) pressure in the lungs when combined with an effective external counterpressure on the body does not cause any significant basic system disorder in the animal organism. Orig. art. has: 4 figures.

ASSOCIATION: None.

SUBMITTED: 15Feb63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: LS NR REF SOV: 002 OTHER: 002

Card 2/2

ACCESSION NR: AP4037624 S/0216/64/000/003/0376/0387

AUTHOR: Kovalenko, Ye. A.; Popkov, V. L.; Chernyakov, I. N.

TITLE: Application of polarography for determining oxygen tension in brain tissues under the influence of factors of high altitude flight

SOURCE: AN SSSR. Izv. Seriya biologicheskaya, no. 3, 1964, 376-387

TOPIC TAGS: polarography, oxygen tension, brain oxygen tension, cortex oxygen tension, dog brain oxygen tension, brain polarography, hypoxia, height induced hypoxia, carbon dioxide breathing, oxygen breathing, rapid ascent hypoxia, lung pressure, lung counter pressure, overload induced hypoxia

ABSTRACT: The basic works on polarography are listed. For this study the mercury drop electrode was replaced by a solid platinum one. The method consists basically in placing 2 electrodes in the tissues of the living organism and applying a 0.6-0.8 voltage. At the cathode a reduction of the available oxygen with initial formation of hydrogenperoxide and its subsequent reduction to water will occur, and this creates a current in the circuit proportional to oxygen concentration in the solution. The theory of the solid platinum electrode has not been completely

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ACCESSION NR: AP4037624

developed as yet. It offers the advantage of measurements in localized parts of the living organism to be used for studying hypoxia states under certain flight conditions. The tests were conducted in dogs; the set-up is figured and the material described. The results of tests for O_2 tension are figured for certain brain tissues upon breathing gas mixtures with a varying O_2 content and upon keeping the dogs in pressure chambers for 2 minutes to simulate various height conditions with and without additional oxygen. The effects of acceleration were also studied and the results are given in % of O_2 tension (pO_2). Upon breathing air these values were rather constant. The correct working of this set-up showed the pO_2 to be proportional to the %content of oxygen in the breathed air. In the first series of experiments on gas mixtures, addition of CO_2 was found to increase pO_2 in the brain under normal conditions and in hypoxia. Rapid ascent to an altitude of 12,000 m without oxygen reduced pO_2 to 1/2 the initial level, with accompanying side effects of hypoxia; and with oxygen to 2/3 that level without side effects. The difference in breathing amplitude under these conditions is briefly touched upon. Almost the same observations were made at 3.6 and 4 km heights. In rapid ascent to 15, 17 and 20 km (simulating leaking of the space cabin) the speed of air rarefication determined brain deoxygenation and the reserve time (30-50 sec.) after which respiratory arrest set in. Upon repeating the tests, a certain adaptation

ACCESSION NR: AP4037624

to hypoxic conditions was observed. In a third series pO_2 was studied upon breathing oxygen under excess pressure in the lungs on the ground as well as in simulated heights. An excess pressure of 300-400 mm on the ground increased pO_2 in the brain, while 500-800 and 1100 mm (water column) decreased pO_2. The effect of compensating such lung pressure by exterior counter pressure was found to depend upon degree and quality of this compensation, on the ground and more so at altitudes to 36-38 km. Oxygen breathing at these heights together with effective counter pressure will keep pO_2 in the brain at 60-70% of the initial value. The effect of acceleration was dependent upon the size, direction and duration of the overload. A twofold overload in the direction pelvis-head had only a slight effect, while an 8-12 fold overload caused a pO_2 pressure contribute to the serious effects of overload. The authors consider this polarographic method highly promising for high altitude physiology. Orig. art. has: 10 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: LS NO REF SOV: 024 OTHER: 017

Card 3/3

CHERNYAKOV, I.N., mayor meditsinskoy sluzhby; POPKOV, V.L., mayor meditsinskoy sluzhby

High-altitude equipment and medical supplies for flights of Lockheed U-2 airplanes. Voen.-med.zhur. no.11:87-88 '64. (MIRA 18:5)

L 27910-65

ACCESSION NR: AP5000266

AUTHOR: Kochetov, A. K. (Mosc
(Moscow)

TITLE: Respiration control ar

SOURCE: Fiziologicheskiy zhur

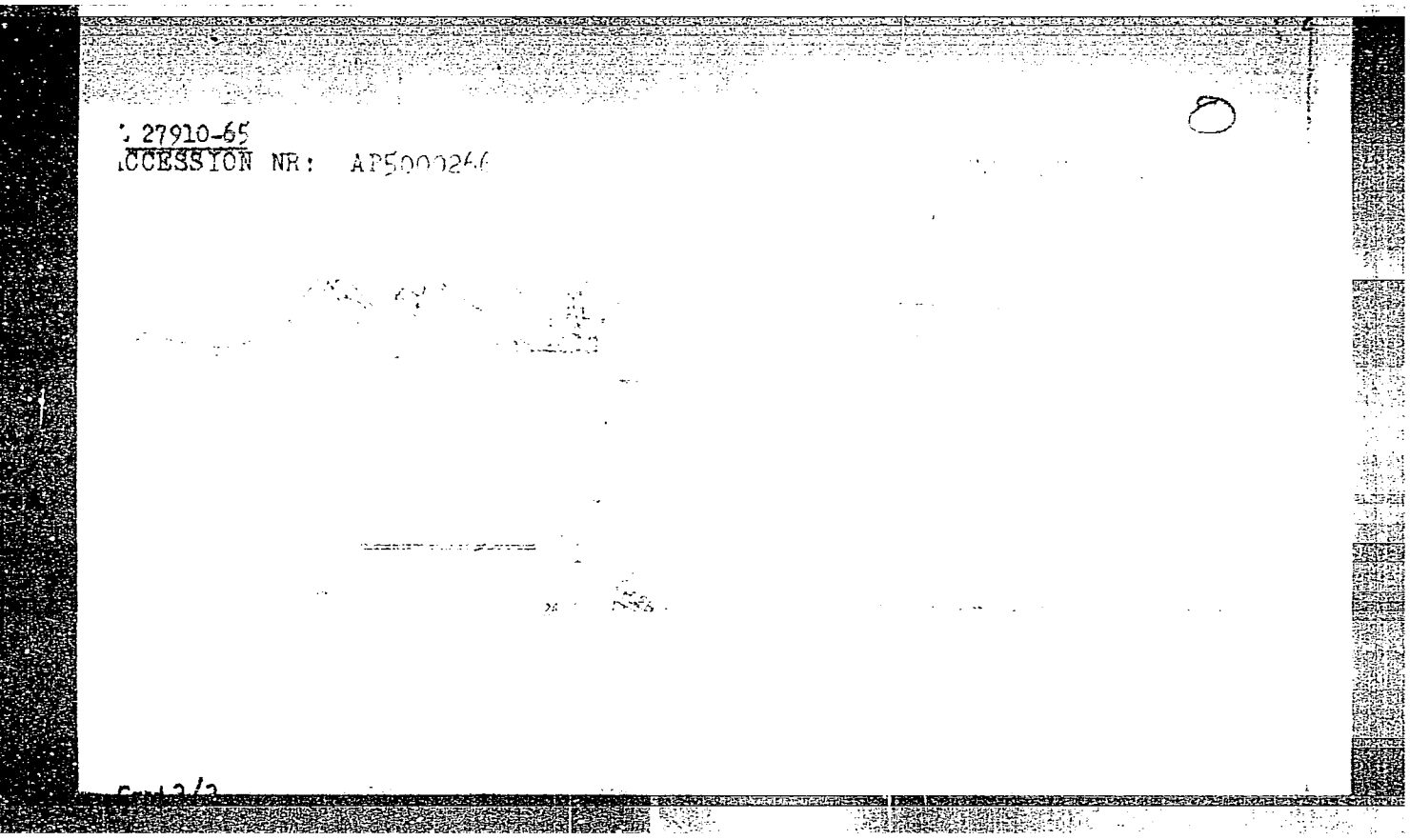
TOPIC TAGS: dor, apparatus, a
respiration, electroencephalo

ABSTRACT: A respiration cont

ASSOCIATION: None

SUBMITTED: 08Aug63 ENCL: 01 SUB CODE: LS

Card 2/3



CHERNYAKOV, I.N.; POPKOV, V.L. (Moskva)

Dynamics of oxygen in the blood and brain tissues of animals at high altitude during respiration under excessive pressure. Fiz. fiziol. i eksp. terap. 9 no.2:18-23 Mr-Ap '65. (MIRA 18:5)

IVANOV, D.I.; MALKIN, V.B.; POPKOV, V.L.; POPOVA, Yu.O.; CHERNYAKOV, L.N.

Automatic analysis of diurnal periodic ghanges in the human electroencephalogram. Probl. kosm. biol. 4:642-644 '65.
(MIRA 18:9)

KOCHETOV, A.K.; POPKOV, V.L.; CHERNYAKOV, I.N.

Apparatus for controlled respiration in intact animals. Fiziol. zhur. 50 no.12:1496-1499 D '64. (MIRA 18:9)

POPKOV, V.I., CHERNYAKOV, I.N., (Kazan')

O_2 and CO_2 tension in the blood in dogs during breathing under excessive pressure at high altitudes. Biul. eksp. biol. i med. 60 no. 10:20-23 O '65 (MIRA 19:1)

1. Submitted June 4, 1964.

L 11259-66 RD
ACC NR: AT6003902 SOURCE CODE: UR/2865/65/004/000/0642/0645

AUTHOR: Ivanov, D. I.; Malkin, V. B.; Popkov, V. L.; Popova, Ye. O.; Chernyakov, I. N.

ORG: none

TITLE: Automatic analysis of diurnal periodic changes in human EEG rhythms

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 642-645

TOPIC TAGS: electrophysiology, man, brain

ABSTRACT: Existing studies of circadian variations in EEG rhythms are of limited value for establishing norms against which to evaluate EEG effects of external environmental factors, since they are almost always collected from patients in pyschiatric hospitals or from healthy individuals during natural sleep. In addition, all existing studies have relied on visual analysis of EEG traces.

In the present study, the EEG's of healthy male subjects were taken 4 times daily (10 a. m., 5 p. m., 1 a. m., and 5 a. m.) for 10 to 30 days.

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Bipolar leads (frontal and occipital) were used. EKG's, pneumograms, and arterial blood pressure were simultaneously recorded.

Frequency analysis of EEG's (after band filter separation of the delta-, theta-, alpha-, and beta-rhythms) yielded data on frequency shifts in individual physiological rhythms. Total EMF (total bioelectric intensity) of the EEG's and the bioelectric intensity of individual biocurrent rhythms were obtained as ratios on an integrator.

Frequency analysis of the EEG's showed that delta- and theta-waves are always present in the waking state, a fact never ascertained by visual analysis of EEG traces owing to the masking effect of the higher frequency alpha- and beta-rhythms. These results cast doubt on the established theory that delta- and theta-waves appear in the EEG only during deep inhibition of the CNS (by drugs or sleep) or in pathological states (hypoxia, psychic disturbances, coma, etc.).

The observation of delta- and theta-waves under the latter conditions is due to increased amplitude of the slow rhythms and probably also to reduced alpha- and beta-activity in the cerebral cortex. However, delta- and theta-rhythms are always present, and can be recorded both in the waking and sleeping states.

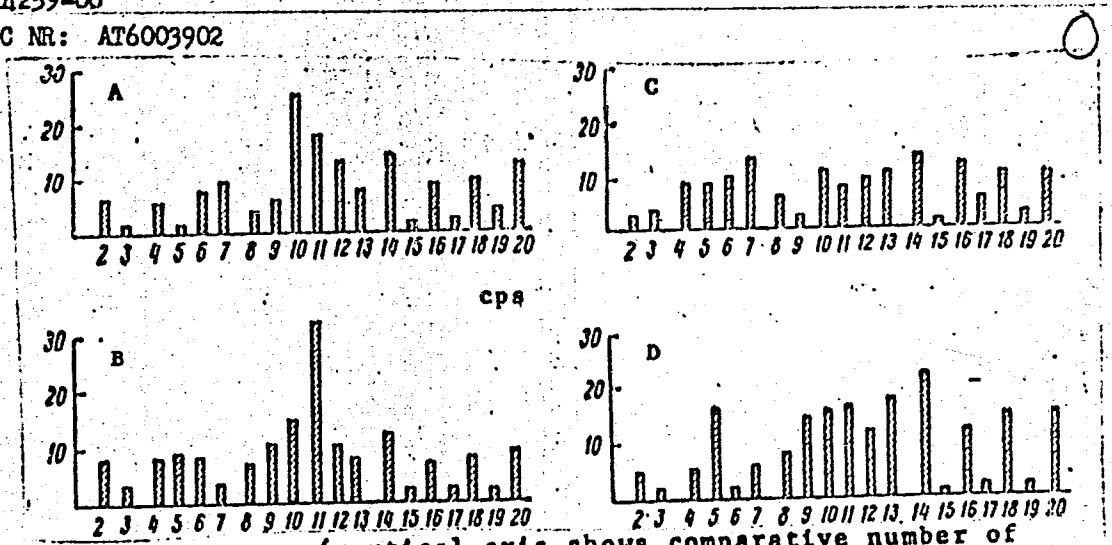
The general EEG picture over a 24-hr period is thus not determined by the alternation of rhythms. The alpha-rhythm is most nearly characteristic of the overall circadian EEG picture.

Most of the 5-p.m. EEG's show a 1 to 2 cps shift of the dominant alpha-rhythm toward higher frequencies by comparison with the morning EEG's (see figure). In the sleeping EEG spectograms, the characteristic daytime alpha-spike was absent and the number of low-frequency alpha waves was greater. Distribution of alpha-waves was comparatively even over the whole range (8 to 13 cps) of the alpha-wave pass filter. The total number of alpha-waves was less than in daytime EEG's.

Nighttime waking EEG's (5 a. m.) generally showed at alpha-rhythm picture close to that of 5-p. m. EEG's (at the end of the working day), and in some cases an alpha-rhythm distribution similar to that of sleeping EEG.

L 11259-66

ACC NR: AT6003902



EEG Spectrograms (vertical axis shows comparative number of waves of each frequency)
A - 10 a.m.; B - 5 p.m.; C - 1 a.m. (sleeping); D - 5 a.m. (waking). 2-3 cps = delta-rhythm, 4-7 cps = theta-rhythm, 8-13 cps = alpha-rhythm, 14-20 cps = beta-rhythm

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As stated above, delta- and theta-waves were never absent from the EEG's. The total number of delta- and theta-waves isolated by the pass filter, always several times less than the total number of alpha- and beta-waves, varied greatly: delta-waves from 1 to 15 in 10 sec, theta-waves from 15 to 56 in 10 sec. No clearcut dependence could be established between the number of delta- and theta-waves and the time of day.

The total EMF and the EMF's of the theta-, alpha-, and beta-rhythms individually were fairly consistent for a given time of day. The lowest EMF's were noted in the morning and the highest at night during sleep. The 5-p.m. EMF was generally higher than the 10-a.m. EMF. Evenings EMF's were higher both with eyes closed and with eyes open. The eyes-closed EMF was more pronounced (143%--300% of the eyes-open EMF).

Eyes-closed theta- and beta- EMF's changed very little or not at all. It is concluded that EMF changes in waking EEG's are due primarily to alpha-EMF changes. Increased EMF during sleep results not from greater numbers of delta- and theta-waves, but from increase in their amplitude.

Orig. art. has: 1 figure. [ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 007 / OTH REF: 002

ACC NR: AT6036621 SOURCE CODE: UR/0000/66/000/000/0313/0314

AUTHOR: Popkov, V. L.; Chernyakov, I. N.

ORG: none

TITLE: Blood pressure dynamics in the right ventricle of the heart under conditions of increased intrapulmonary pressure [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 313-314

TOPIC TAGS: oxygen excess pressure, hyperoxia, cardiovascular system, blood pressure

ABSTRACT:
Blood pressure in the right ventricle of dogs was measured with an electromanometer. Pressure oxygen breathing was used to create constant positive pressures of 20, 30, and 40 mm Hg in the upper respiratory tract. Elevated right ventricular blood pressure was observed during increased intrapulmonary pressure. During exhalation, systolic and diastolic pressures were 10 to 20 mm Hg higher than during inhalation, with and

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ACC NR: AT6036621

without excess pressure breathing (EP = 20, 30, and 40 mm Hg). The elevation of right ventricular blood pressure remained 1 to 10 mm Hg less than intratracheal pressure during excess pressure breathing. Mean systolic pressure during inhalation increased, from +36 mm Hg without excess pressure to: 64 mm Hg at EP = 20 mm Hg; 63 mm Hg at EP = 30 mm Hg; and 71 mm Hg at EP = 40 mm Hg. Mean diastolic pressure during inhalation increased, from +4 mm Hg without excess pressure to: 21 mm Hg at EP = 20 mm Hg; 28 mm Hg at EP = 30 mm Hg; and 32 mm Hg at EP = 40 mm Hg. The lag of right ventricular pressure behind increasing intrapulmonary pressure contradicts the theory that elevated right ventricular pressure is caused by mechanical pressure of the expanding lungs on the heart. The difference in right ventricular systolic and diastolic pressures increased by 2 to 11 mm Hg during excess intrapulmonary pressure, but this increased difference was not correlated with the amount of excess pressure. The experimental data obtained contradict the long-held theory of right ventricular hyperfunction during increased intrapulmonary pressure.

[N. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

ACC NR: AT6036531 SOURCE CODE: UR/0000/66/000/000/0122/0123

AUTHOR: Glazkova, V. A.; Maksimov, I. V.; Chernyakov, I. N.

ORG: none

TITLE: Dynamics of blood oxygen saturation in man during excess pressure breathing at high altitudes [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966.]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 122-123

TOPIC TAGS: high altitude physiology, blood chemistry, human physiology, hypoxia, oxyhemography, blood oxygen saturation

ABSTRACT: Blood oxygen saturation during excess pressure breathing (150 and 180 mm Hg) at altitudes of 30000 m and higher with counterpressure altitude compensation was studied in man by the oxyhemograph method. Saturation level obtained during pure oxygen breathing on the ground was taken as 98 to 100%.

Above 12000 m, blood oxygenation depends on absolute intrapulmonary pressure which in turn determines alveolar pO_2. At an intrapulmonary pressure $\simeq$ 150 mm Hg (alveolar $pO_2 \simeq 60$ mm Hg), blood oxygen satura-

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tion varied between 84% and 88% at all altitudes from 12000--38000 m. At a higher intrapulmonary pressure of 180 mm Hg (alveolar $pO_2 \simeq$ 90 mm Hg), oxyhemoglobin rose to 90% -- 95%.

Breathing air at 3000 m gives an alveolar pO_2 about equal to that obtained by breathing oxygen without excess pressure at 12000 m with an absolute intrapulmonary pressure of 150 mm Hg at altitudes above 12000 m. Nonetheless, blood oxygen saturation was lower (76% to 78%) while breathing air at 3000 m than while breathing oxygen at 12000 m and above (84% and 86%, respectively). It is suggested that the exclusion of nitrogen from the alveoli during oxygen breathing at 12000 m and above improves oxygenation of the blood.

Conversation or counting aloud produced a 3% to 5% increase in blood oxygen saturation provided speech activity did not interfere with respiration rhythm and provided the subject did not speak too softly and slowly. This increase is due to hyperventilation accompanying active speech and not to enhanced cerebral blood circulation due to mental effort.

During light physical exercise, saturation plunged to 74% to 78%, the rate of decrease depending on intensity of the exercise and impairment of external respiration.

ACC NR: AT6036531

On longer exposure to the maximum altitude, oxyhemoglobin gradually decreased by 4% to 6% though the absolute intrapulmonary pressure did not change. This decrease is not yet explained.

In two cases in which presyncope states developed, oxyhemoglobin fell gradually to 70% or 60%, then increased sharply to 95% or 96%. These disturbances were evidently due not to hypoxic hypoxia, but to circulatory hypoxia.

Recordings of linear blood flow velocity and the endurance of voluntary apnea showed these indices also to depend on oxyhemoglobin percents.

[W. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

FROLOV, Petr Terent'yevich, kand. tekhn. nauk, prof.; GINKEVICH, Petr Stepanovich, kand. tekhn. nauk, dots.; YEFIMOV, Sergey Grigor'yevich, kand. tekhn.nauk, dots.; BAUMAN, V.A., retsenzent; SHADRIN, I.A., prof., retsenzent; DUBINSKIY, P.F., doktor tekhn. nauk, prof., retsenzent; MONAKHOV, I.G., dots., retsenzent; FIITSUKOV, M.A., dots., retsenzent; CHERNYAKOV, L.M., dots., retsenzent; ANDREYEV, B.K., dots., retsenzent; SHADRINA, G.N., dots., retsenzent; VAYNSON, A.A., nauchnyy red.; SHAROVA, Ye.A., red. izd-va; VORONINA, R.K., tekhn. red.

[Principles of the mechanization construction work] Osnovy mekhanizatsii stroitel'nykh rabot. Moskva, Vysshaia shkola, 1962. 299 p. (MIRA 16:4)

1. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Bauman). 2. Kafedra stroitel'nogo proizvodstva Moskovskogo instituta inzhenerov zheleznodorozhnogo transporta (for Dubinskiy, Monakhv, Fiitsukov, Chernyakov, Andreyev, Shadrina). 3. Zaveduyushchiy kafedroy stroitel'nogo proizvodstva Moskovskogo instituta inzhenerov zheleznodorozhnogo transporta (for Shadrin).

(Construction equipment) (Automatic control)

RUZAKOV, V., CHERNYAKOV, L.

Silos - Siberia

Experience of building half-silos in Siberia. Sel'. stroi. no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952 1953, Unclassified.

CHERNYAKOV, L.M.

DUBINSKIY, P.F., prof., doktor tekhn. nauk; ANDREYEV, B.K.; KUT'INOV, F.I.; MONAKHOV, I.G.; FISHCHUKOV, M.A.; CHERNYAKOV, L.M.; SHADRINA, G.N.; GRINEVSKIY, I.A., inzh., red.; KHITROV, P.A., tekhn. red.

[Construction work and machines] Stroitel'nye raboty i mashiny. Pod red. P.F. Dubinskogo. Moskva, Gos. transp. zhel-dor. izd-vo, 1958. 540 p. (MIRA 11:10)

(Railroads--Construction)

CHERNYAKOV L. M.

DUBINSKIY, P.F., doktor tekhn.nauk; ANDREYEV, B.K., kand.tekhn.nauk; MONAKHOV, I.G., kand.tekhn.nauk; FISHCHUKOV, M.A., kand.tekhn.nauk; CHERNYAKOV, L.M., kand.tekhn.nauk; SHADRINA, G.N., kand.tekhn.nauk; KOKIN, M.V., inzh.

The over-all mechanization of assembling apartment houses. Transp. stroi. 9 no.6:13-17 Je '59. (MIRA 12:11)
(Building machinery) (Apartment houses)

DUBINSKIY, P.F., doktor tekhn.nauk; ANDREYEV, B.K., kand.tekhn.nauk; MONAKHOV, I.G., kand.tekhn.nauk; FISHCHUKOV, M.A., kand.tekhn. nauk; CHERNYAKOV, L.M., kand.tekhn.nauk; SHADRINA, G.N., kand.tekhn. nauk.

The over-all mechanization of assembly operations in building large-panel apartment houses. Transp.stroi. 10 no.8:31-36 Ag '60. (MIRA 13:8)
(Apartment houses)
(Cranes, derricks, etc.)

CHERNYAKOV, I.M., dotsent, kand.tekhn.nauk

Selecting cranes, determining, and analyzing their engineering and economic indices during the erection of large-block buildings. Trudy MIIT no.192:58-77 '65.

Some problems in assembling buildings of large elements directly from the transporting machines. Ibid.:88-97

(MIRA 18:5)

BATSHEV, S.M., inzh.; CHERNYAKOV, M.G., inzh.

New design of the thermal insulation system of a large steam turbine. Energ. stroi. no.32:38-41 '62. (MIRA 16:5)

1. TSentrenergoteploizolyatsiya.

ACC NR: AP7005389 (N) SOURCE CODE: UR/0114/67/000/001/0035/0037

AUTHOR: Batshev, S. M. (Engineer); Pliss, D. A. (Engineer); Chernyakov, M. G. (Engineer)

ORG: none

TITLE: Spray-on heat insulation of power equipment

SOURCE: Energomashinostroyeniye, no. 1, 1967, 35-37

TOPIC TAGS: asbestos product, heat insulation, atomization, turbine stage

ABSTRACT: A new improved method of heat-insulation of turbines, employed in the West, is deposition of this insulation with the aid of a spray gun by using amphibole (blue) asbestos previously mixed with a binder and pneumatically supplied to the spray gun; on ejection from the spray gun the mixture is wetted with water and in this form settles on the surface of the equipment. This method has been introduced in the USSR on using chrysotile (serpentine) asbestos. The recipes for this mixture as used in the USSR provide for the use of asbestos in various proportions (chiefly 40 to 80%) to pearlite, water glass, basaltic fiber or vermiculite or cement.

Card 1/3 UDC: 662.998.621.3.002.5

ACC NR: AP7005389

Special machinery has been developed for this purpose, as exemplified by the machine shown in Fig. 1,

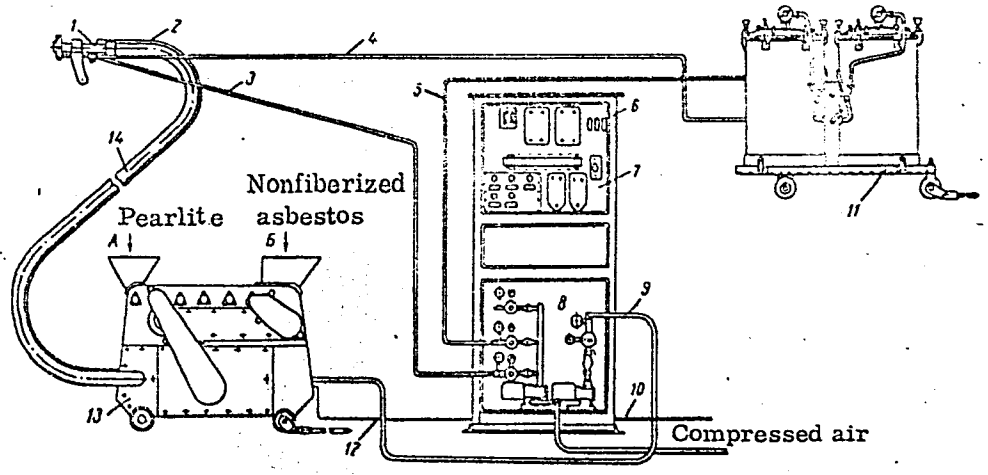

Fig. 1. Specialized installation for spray-on deposition of heat insulation on power equipment

Card 2/3

ACC NR: AP7005389

developed by the Tsentroenergoteploizolyatsiya Combine in Moscow: this machine performs the operations of proportioning and fiberizing of asbestos, proportioning of pearlite, mixing of pearlite with fiberized asbestos and supplying the ready mix to the spray gun. The heat insulation thus produced has been tested on 12 turbines with capacities of 50, 100 and 200 MW. The continuing extensive studies of the turbines with spray-on heat insulation indicate that all the advantages of amphibole asbestos insulation also are largely inherent in spray-on insulation consisting of chrysotile asbestos, pearlite and potash water glass (the binder). Such a heat insulation tightly adheres to the surface of even intricately shaped equipment and completely covers it, which contributes to a decrease in the temperature difference between the top and bottom of the metal of turbine cylinders and prolongs cooling time so as to preclude complete shutdown of the turbine, and it is resistant to vibrations and shocks and it chemically inert. Operating experience shows that, given an efficient organization of operatic s, the proportion of manual labor in the total volume of the operations involved in the production and deposition of spray-on insulation can diminish to as little as 12%. Orig. art. has: 4 figures, 1 table.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 003

Card 3/3

1. CHERNYAKOV, M. YA.
2. USSR (600)
4. Speech
7. Work with pupils' speech in mathematics classes. Mat. v shkole no. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

CHERNYAKOV, N.F.

Processing wheat flour to starch. Sakh.prom. 34 no.6:62-63 Je '60. (MIRA 13:7)

1. Buchanskiy krakhmal'nyy zavod.
(Wheat) (Starch)

L 11387-67 EWT(1) SCTB DD/GD

ACC NR: AT6036511 SOURCE CODE: UR/0000/66/000/000/0085/0086

AUTHOR: Vakar, M. I.; Chernyakov, N. I.; Maksimov, I. V.; Glazkova, V. A.; Azhevskiy, P. Ya. 20

ORG: none

TITLE: Moisture loss in the human organism at high altitudes [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 85-86

TOPIC TAGS: high altitude physiology, alpine acclimatization, hypoxia, human physiology, perspiration

ABSTRACT: Moisture loss in man during exposures of several hours to high altitudes (30,000 m and above) during pressure oxygen breathing was studied.

The subjects wore altitude compensating suits which did not prevent contact between the skin and the high vacuum and did not impede evaporation of moisture from the surface of the body and from underclothing. Water loss was calculated by weighing the subjects before and after the experiment. Decrease in temperature of the skin and underclothing was recorded with a thermocouple and served as an indirect index of evaporation intensity.

Card 1/2

ACC NR: AT6036511

The subjects were at rest in some experiments and performed physical work of medium difficulty in others.

It was found that during prolonged resting exposure to high altitudes moisture loss increases by 1.5 to 2 times (from 40-50g/hr to 70-120g/hr). This increase is due to increased evaporation from the skin in a rarefied atmosphere. Increased perspiration due to emotional tension was also sometimes seen.

Step test exercises caused still greater water loss (120 to 225 g/hr). Increased moisture loss at high altitudes was primarily due to the wearing of altitude equipment which hindered movement, as well as to rarefied atmosphere and emotional tension.

Skin temperature dynamics confirmed the intensification of evaporation from the body and underclothing at high altitudes. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

TOKAR', I.Ya. (Khar'kov); CHERNYAKOV, P.S. (Khar'kov)

Lubrication of thrust bearings having a conic supporting surface taking heat transmission into consideration. Izv.AN SSSR. Mekh. i mashinostr. no.4.123-126 Jl-Ag '63. (MIRA 17:4)

ACC NR: AP7000778 SOURCE CODE: UR/0208/66/006/006/1043/1053

AUTHOR: Chernyakov, P. S. (Khar'kov)

ORG: none

TITLE: On weak free convection in vessels in a gravitation field

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 6, no. 6, 1966, 1043-1053

TOPIC TAGS: thermal convection, existence theorem, uniqueness theorem, temperature, incompressible fluid, boundary value problem, gravitation field

ABSTRACT: This paper presents an examination of equations of weak nonstationary free convection in partially filled vessels in a gravitation field: in a liquid

$$c_1\rho_1\frac{\partial T_0}{\partial t}=\lambda_1\Delta T_0,$$

$$\rho_1\frac{\partial \mathbf{v}_1}{\partial t}=-\operatorname{grad}p_1-g\beta_1T_0\mathbf{i}+\mu_1\Delta\mathbf{v}_1,$$

$$c_1\rho_1\frac{\partial T_1}{\partial t}=\lambda_1\Delta T_1-c_1\rho_1(\mathbf{v}_1\cdot\operatorname{grad}T_0),$$

$$\operatorname{div}\mathbf{v}_1=0,\qquad T=T_0+T_1;$$

Card 1/3

UDC: 517.9:532

and in a gas

$$c_2\rho_2\frac{\partial\tau_0}{\partial t}=\lambda_2\Delta\tau_0,$$

$$\rho_2\frac{\partial v_2}{\partial t}=-\left[\operatorname{grad}p_2-g\beta_2\tau_0 l\right]+\mu_2\Delta v_2,$$

$$c_2\rho_2\frac{\partial\tau_1}{\partial t}=\lambda_2\Delta\tau_1-c_2\rho_2(v_2,\operatorname{grad}\tau_0),$$

$$\operatorname{div}v_2=0,\qquad \tau=\tau_0+\tau_1,$$

where c_1, c_2 are the specific heats of the liquid and gas, respectively; ρ_1, ρ_2 the densities; μ_1, μ_2 the viscosities; β_1, β_2 the dilations; v_1, v_2 the velocities; p_1, p_2 the pressures; and T, τ the temperatures. The following initial and boundary conditions are introduced:

$$v_1(x,0)=0,\quad v_1(x,t)|_{x\in s_1}=0,\quad T_0(x,0)=0,$$
$$T_0(x,t)|_{x\in s_1}=f,\quad T_1(x,0)=0,\quad T_1(x,t)|_{x\in s_1}=0,$$
$$v_2(x,0)=0,\quad v_2(x,t)|_{x\in s_2}=0,\quad \tau_0(x,0)=0,$$
$$\tau_0(x,t)|_{x\in s_2}=f,\quad \tau_1(x,0)=0,\quad \tau_1(x,t)|_{x\in s_2}=0.$$

A priori estimates of the solutions are found, and the existence and uniqueness of

ACC NR: AP7000778

the solution are proved. An approximate method for finding the solution is also indicated. The author thanks A. D. Myshkis for guiding the work and N. D. Kopachevskiy for discussing the article. Orig. art. has: 15 formulas and 2 diagrams.

SUB CODE: 20, 12/ SUBM DATE: 01Nov65/ ORIG REF: 004/ OTH REF: 003

Card 3/3

L 10143-63 EPF(c)/EWT(m)/BDS/ES(s)-2--AFFTC/APGC/SSD--
Pr-4/Pi-4--BW/DJ
ACCESSION NR: AP3000893 S/0179/63/000/002/0149/0152

AUTHOR: Tokar', I. Ya.; Chernyakov, P. S. (Khar'kov) 69 66

TITLE: Contribution to the problem of the lubrication of journal bearings having a bearing surface of axially-symmetrical form.

SOURCE: AN SSSR. Izv. Otd. tekh. nauk. Mekhanika i mashinostroyeniye, no. 2, 1963, 149-152

TOPIC TAGS: journal bearing, friction bearing, axially-symmetrical journal bearing, bearing for large turbogenerator, design charts for bearings

ABSTRACT: The present theoretical study constitutes an extension of I. Ye. Tarapov's study on the steady-state flow of a viscous, incompressible, fluid between two flat rotating disks (Akad. nauk SSSR, Izv., Otd. tekh. nauk. Mekhanika i mashinostroyeniye, no. 2, 1959) and the first author's study of the similar problem of a frustum of cone and a plane disk (Vestnik elektropromyshlennosti, no. 6, 1960), the latter of which resulted in the

Card 1/2

L 10113-63
ACCESSION NR: AP3000893

3

recommendation of end seals with a conical bearing surface for large turbogenerators. The present paper endeavors to develop calculation formulas for the design of some end seals and a number of types of thrust bearings with a conical bearing surface. The analysis examines the stationary flow of an incompressible viscous fluid between two axially symmetrical surfaces of which one rotates and the other is fixed. The flow is assumed to be laminar. Upon formulation of the Navier-Stokes equation and the equation of continuity, integration yields expressions for the loss of lubricant at the periphery, the friction moment, and the load-carrying capacity. Specific expressions are set forth for journal bearings with a bearing surface of conical shape and similar bearings having a cylindrical collar at the small-diam end of the journal which is helpful in ensuring effective lubrication under starting conditions and which in effect creates a bearing with a combined conical and cylindrical bearing surface. From the working charts developed from the analytical expressions for the dimensionless load-carrying capacity in terms of a nondimensional internal radius, it follows that the load-carrying capacity grows not only with increasing boundary pressure, but also with decreasing internal radius. Here not only the nondimensional load-carrying capacity but also the maximum admissible load increases. There are 17 numbered equations and 5 figures.

ASSOCIATION: none
SUBMITTED: 03May62 DATE ACQ: 12Jun63 ENCL: 00
SUB CODE: IM, PL NR REF SOV: 003 OTHER: 000
Card 2/2

S/122/63/000/003/003/008
A004/A127

AUTHORS: Tokar', I.Ya., Candidate of Technical Sciences; Chernyakov, P.S.

TITLE: Calculation of friction bearings with tapered carrying surface

PERIODICAL: Vestnik mashinostroyeniya, no. 3, 1963, 15 - 20

TEXT: Since bearings of hydrodynamic friction used at present to an increasing extent have an inclined bearing carrying surface, which requires manual finishing operations, it is of considerable interest to develop surfaces that do not require manual scraping, but can be manufactured with practically any required accuracy on lathes. The authors present appropriate formulae for calculating the necessary parameters of such machining processes and compare the basic sealing parameters obtained by calculation with those obtained as a result of tests at an excess pressure of compressed air of 3 atm, which proved that the calculation results according to the recommended formulae were sufficiently corroborated by the tests. There are 7 figures.

Card 1/1

TOKAR', I.Ya., kand.tekhn.nauk; CHERNYAKOV, P.S.

Designing friction supports with a conic carrying surface. Vest. mashinostr. 43 no.3:15-20 Mr '63. (MIRA 16:3)
(Bearings (Machinery))

TOKAR', I.Ya. (Khar'kov); CHERNYAKOV, P.S. (Khar'kov)

Problem of the lubrication of friction bearings having an axisymmetric shape of the carrying surface. Izv. AN SSSR Otd. tekh. nauk. Mekh. i mashinostr. no.2:149-152 Mr-Ap '63. (MIRA 16:6)

(Bearings(Machinery)—Lubrication)

TOKAR', I.YA.; CHERNYAKOV, P.S. (Khar'kov)

"Lubrication of bearings operating the reverse regime"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

CHERNYAKOV, R.B.

21(6) PHASE I BOOK EXPLOITATION SOV/2164

Vsesoyuznaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov v narodnom khozyaystve i nauke. Moskva, 1957.

Trudy... Primeneniye radioaktivnykh i stabil'nykh izotopov (Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 598 p. 4,500 copies printed.

Sponsoring Agencies: Ufa. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikunin, Academician (Resp. Ed.), N.M. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zaslavskiy (Deputy Resp. Ed.), L.K. Tatochenko, B.I. Verkhovskiy, S.Z. Kasarov, L.I. Petrenko, and N.G. Zelvinskaya (Secretary).

Ed. of Publishing House: P.N. Belyanin; Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

COVERAGE: This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine- and instrument-manufacturing industry. The individual papers discuss the applications of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet institutes and laboratories. They were published as Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

Chernyakov, R.B. Method for Estimating the Degree of Degreasing of Metals 108

Gulyayev, B.B., Yu.F. Boyprikiy, L.N. Postnov, O.N. Magnitskiy. Study of the Processes of Cast Formation in Sand Molds 112

Vitkin, A.L. (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii - Central Scientific Research Institute of Ferrous Metallurgy). Study of the Mechanism of the Basic Processes in Hot Tin Plating 119

Yordan, O.D., and K.S. Furman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya - Scientific Research Institute of Heat-Power Instruments). Use of Radiation for the Measurement of Heat-Power Parameters 124

Verkhovskiy, B.I., V.A. Sotnikov, and V.V. Yakushin (Fizicheskiy institut imeni P.N. Lebedeva - Institute of Physics imeni P.N. Lebedev, Academy of Sciences, USSR). Reduction of Errors in Measurements Performed With Scintillation Counters 127

Korotkova, V.A. (Fizicheskiy institut imeni P.N. Lebedeva - Institute of Physics, Academy of Sciences, USSR). Radiation in Analytical Methods 134

Afanas'yev, Yu.N. Automation of Measurements and Recording of Radioactive Radiation Intensity 140

Talichkin, V.G. Study of the Electrical Properties of Ionization Resistors 146

Yagelin, V.G., and A.A. Rudanovskiy (Vsesoyuznyy nauchno-issledovatel'skiy institut - All-Union Coal Research Institute). Use of Radioactive Isotopes in the Automation of Excavating and Drifting Machines 150

Yordan, O.D., and K.S. Furman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya - Scientific Research Institute for Heat-Power Instrument Making). Measuring the Density of Liquids With Gamma Radiation 153

L 06475-67 EWT(m)/EWP(e) WH/WW

ACC NR: AR6028234 SOURCE CODE: UR/0081/66/000/009/M018/M018

AUTHOR: Bartenev, G. M.; Chernyakov, R. G.

TITLE: Strength of fibers with a coating made of alkali-free aluminoborosilicate glass

SOURCE: Ref. zh. Khimiya, Part II, Abs. 9M149

REF SOURCE: Steklo. Tr. In-ta stekla, no. 3(128), 1965, 16-19

TOPIC TAGS: glass fiber, silicate glass

ABSTRACT: No theory exists to account for the nature of the high strength of glass fibers (GF). An attempt was made to determine the dependence of the strength of continuous glass fibers on the conditions of cooling in the course of their production. In order to study the effect of the conditions under which the glass mass is cooled during forming on the strength of GF, a method was developed for producing GF with a coating made of various glass compositions having approximately the same coefficient of thermal expansion. Results are given for determinations of the strength of single-layer fibers and fibers with a coating of industrial alkali-free aluminoborosilicate glass (fiber diameter 9-10 μ, coating thickness 1-2 mm). According to the proposed method of production, it was possible to form an outer layer of GF from a low-viscosity aluminoborosilicate glass which cannot be formed into fiber by the usual

Card 1/2

I. 06475-67

ACC NR: AR6028234

technological process. Specimens of coated fibers having a high strength were obtained. The hardening of the surface layer of GF depends on the conditions of cooling of the "bulb," which are determined by its length. I. M. [Translation of abstract]

SUB CODE: 11

Card 2/2 mlc

CHERNYAKOV, S.I.

AID P - 5573

Subject : USSR/Aeronautics - education

Card 1/1 Pub. 135 - 12/27

Authors : Anokhin, M. P., Eng.-Maj. and S. I. Chernyakov, Captain of tech. service.

Title : All possibilities should be used for the improvement of technical knowledge.

Periodical : Vest. vozd. flota, 6, 69-72, Je 1956

Abstract : The authors, on the basis of experience gained in their unit, describe how the technical knowledge of personnel can be improved in several ways. The article is of informative value.

Institution : None

Submitted : No date

ACC NR: AP7002692 SOURCE CODE: UR/0424/66/000/006/0057/0063

AUTHOR: Feodos'yev, V. I. (Moscow); Chernyakov, S. M. (Moscow)

ORG: none

TITLE: On transmitting the concentrated forces to a thin-walled shell

SOURCE: Inzhenernyy zhurnal. Mekhanika tverdogo tela, no. 6, 1966, 57-63

TOPIC TAGS: spherical shell, ~~thin shell~~, shell deformation, ~~shell load capacity~~, spherical shell structure

ABSTRACT:

A thin spherical shell under internal uniform pressure p is subjected to compression by a concentrated force P applied to the center of a butt welded flange which makes it possible to distribute the force P over a larger area, as shown in the figure. The dependence of force P on displacement λ is discussed by analyzing the deformed state of the shell, under the assumption that its material is nonlinearly elastic. The (P, λ)-diagrams are specific for a certain structure, and characterize its behavior under increasing load so that the carrying capacity of a structure can be determined from its (P, λ)-diagram. This approach is analogous to designing a structure for allowable stresses. In using this approach, it is possible to take into account and determine, if necessary, the associated stresses generated in the shell during the process of loading. The difficulties in constructing a (P, λ)-diagram, which are caused by large displacements and by the presence

Card 1/3 UDC: none

ACC NR: AP7002692

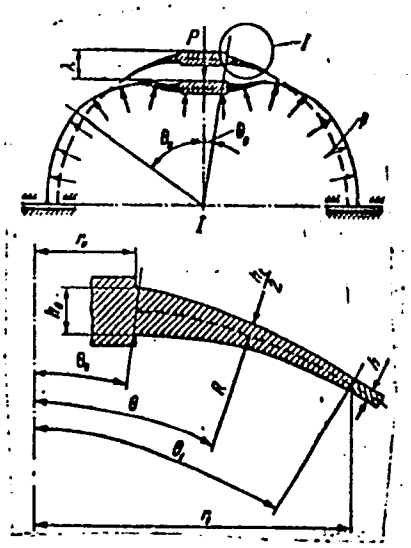

Fig. 1.

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ACC NR: AP7002692

of plastic deformations, are surmounted by using the method developed by V. I. Feodos'yev for solving nonlinear problems of stability of deformed systems (PMM, 1963, v. 27, no. 2), and taking λ as an independent parameter. The calculated and experimental (P, λ)-curves for shells with various flange dimensions are compared in a diagram which shows insignificant acceptable (from the engineering viewpoint) discrepancies between the theory and experiment. The load carrying capacity of these shells (characterized by a geometrical parameter $h\theta_0^2/R$) is shown in a diagram as a function of the h_0/h ratio for the values of the ratios $r_1/r_0 = 2; 3;$ and 4. The effects of a certain pliability of the flange and of the Poisson-ratio magnitude on the shape of the (P, λ)-curves are mentioned. Orig. art. has: 7 figures, and 15 formulas.

SUB CODE: 13/ SUBM DATE: 03May66/ ORIG REF: 001/ ATD PRESS: 5112

Card 3/3

CHERNYAKOV, S.S.

USSR/ Engineering- Glass furnaces

Card 1/1 Pub. 104 - 8/11

Authors : Ginzburg, D. B., Dr. of Techn. Sc., and Chernyakov, S. S.

Title : Utilization of the heat of waste gases discharged by glass furnaces

Periodical : Stek. i ker. 4, 22-25, Apr 1954

Abstract : It is shown that waste gases, discharged from glass furnaces, carry away 20 to 30% of the total heat, necessary for the fusion of glass. The heat of waste gases at their high temperature can be utilized for the generation of steam, boiling of hot water and heating of the air, and at low temperature the heat can be used for drying fuel with high moisture content, for the obtainment of warm water and many other purposes. The arrangements necessary for the entrapment of the hot gases and their utilization for profitable purposes, are described. One USSR reference (-). Table; drawings.

Institution: .....

Submitted: .....

CHERNYAKOV, V.A., podpolkovnik meditsinskoy sluzhby

Surgical treatment of exfoliation of the retina in a hospital.
Voen.-med. zhur. no.9:40 S '55. (MLRA 9:9)
(RETINA--SURGERY)

S/148/60/000/007/019/023/XX
A161/A033

AUTHORS: Chernyakov, V. A., Samarin, A. M.

TITLE: Desulfuration in transformer steel melting

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 7, 1960, 37 - 41

TEXT: The investigation purpose was to find a way to shorten the reduction period in the transformation steel melting process in electric furnaces. Some plants are practicing deoxidation by addition of aluminum or silicocalcium after skimming the oxidizing slag, and then holding the bath under slag that forms in the result of multiple charging of a mixture of lime with powdered ferrosilicon and aluminum, or silicocalcium. Lump ferrosilicon is added after this treatment to add silicon. The total duration of the reducing period is 1.5 - 2 hours, and is needed for desulfuration. It had been stated previously (Ref. 1: Z. Buzhek, A. M. Samarin, Zavisimost' meshdu desul'furatsiey i raskisleniyem stali (Dependence between Desulfuration and Deoxidation of steel) Izv. AN SSSR, OTN, 1957, No. 9) that silicon speeds up desulfuration. Experiments at the Moscow Steel Institute were carried out with a high-frequen-

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Desulfuration in transformation steel melting

S/148/60/000/007/019/023/XX
A161/A033

cy induction furnace of 40 kg capacity, using a magnesite crucible. Soft iron chippings with 0.1 % C and 0.4% Mn were used for the metal charge, and some electrode steel cuttings were added to obtain about 0.4 % of carbon in the liquid metal. Slag was produced using the mixtures. 1) 50 % lime, 39% sand, and 11 % alumina; 2) 50 % magnesite powder, 30 % fireclay brick, 15 % alumina and 5 % lime. MgO content in lime-containing slag rose to 10 - 15 % due to erosion of the crucible. The metal samples were taken by suction into a quartz tube, and slag samples by freezing onto a metal rod. The effect of Si was observed by additions of 75-% powder ferrosilicon and later of lump ferrosilicon. The sulfur content dropped rapidly after the addition of lump ferrosilicon (Figure 1, solid lines). In the second heats series (6672, 6673, 7685, 7686), the same slag compositions were used, but all ferrosilicon needed for alloying was added at the beginning of the reduction period, after the removal of the oxidizing slag. Ferrosilicon was charged onto the metal surface, and the produced slag was deoxidized with ground 75-% ferrosilicon. In the 2nd series the desulfuration was markedly higher (Figure 1, dashed lines), and the sulfur content in the ready steel was lower. The effect of silicon on the sulfur activity factor is one of the factors speeding up desulfuration. According to

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Desulfuration in transformation steel melting

Morris and Williams (Ref. 2: The Effect of Silicon on the Activity of Sulfur in Liquid. Iron Tran. Am. Soc. Metals, 1949, v. 41, 1425) the sulfur activity factor is nearly twice as high at 4 % Si content as in pure iron. If all the ferrosilicon is added in the beginning of the reduction period during the shorter time, the oxygen content in metal is low (Figure 2, dashed lines). The effect of the slag composition was studied on heats under magnesium-aluminum slags with 35 - 40 % MgO, 7.0 - 10 % Al_2O_3, and 30 - 35 % SiO_2. Deoxidation and silicon additions were applied in two different ways. The rate and degree of desulfuration under magnesium-alumina slag was lower than under lime slag. The sulfur content in ready steel was three times higher than with lime slag (Figure 3) The early addition of silicon had no marked effect on the desulfuration in the case of magnesium-aluminum slag. (Figure 4). The content of non-metallic inclusions in steel practically did not depend on the melting method. This may be explained by the small size of the laboratory furnace and the mixing of metal in it. Conclusions: 1) Desulfuration and deoxidation of liquid transformer steel occur simultaneously. 2) The rate and degree of desulfuration are higher when silicon is added in the beginning of the reduction period. A low sulfur content is reached in a shorter time, and the reduction

Card 3/7

Desulfuration in transformation steel melting

period can be made shorter. 3) The rate and completeness of desulfuration is considerably higher among slags with a high calcium oxide content than among magnesium-alumina slags. There are 4 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English language publication reads as follows: J. P. Morris and A. J. Williams. J. the Effect of Silicon on the Activity of Sulphur in Liquid Iron. Tran. Am. Soc. Metals, 1949, v. 41, 1425.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: March 24, 1960

Card 4/7

S/148/60/000/011/002/015
A161/A030

AUTHORS: Chernyakov, V. A.; Samarin, A. M.

TITLE: Desulfuration of liquid metal with slag in vacuum treatment

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 11, 1960, 32 - 35

TEXT: Information is given on laboratory experiments at the Moscow Steel Institute. It is said in a brief introductory review that the slag treatment idea came from Engineer A. S. Tochinskiy (in 1925), was later developed abroad by Zhiro and Perren (Russian spelling) (Ref. 2: M. I. Aronovich and Ye. B. Kostyuchenko, book, "Development of slag treatment method abroad", 1936), and that in the USSR the Verkh-Isetskiy zavod (Verkhniy-Iset Works) desulfurized transformer steel with powder slag composed of 80 % freshly roasted lime and 20 % fluorspar during tapping (using 1.2 - 1.1 % slag mass, in weight per cent, and achieving S content reduction to 0.011 % from 0.022) transformer steel melted in an open-hearth furnace was treated with slag mixture of 83 % lime, 12 % fluorspar and 5 % soda, which proved three times more effective than treatment with furnace slag during

Desulfuration of liquid metal .....

tapping (Ref. 5: N.F. Dubrov and A.I. Kerin, Stal', 1956, No. 1). Vacuum treatment in a ladle is now coming into use. The Moscow Steel Institute experimented in a laboratory where vacuum treatment in a ladle was not possible; the equipment comprised a 40-kg induction vacuum furnace with a magnesite crucible. Liquid slag was prepared in a graphite crucible within an induction furnace. Slags selected in preliminary experiments were: 1) 80 % lime with 20 % fluorspar, and 2) 50 % lime and 50 % alumina. A slag mixture of lime and fluorspar was then heated to 800°C and put on the metal surface, and the lime-alumina mixture was melted and poured onto the metal. Conclusions: 1) Ten minutes treatment in vacuum with slag of lime with fluorspar reduces S content in steel 60 %; 2) same treatment with lime-alumina slag reduces S content 45 %; 3) The proper quantity of lime-alumina slag is 2 - 4 % of the weight of the metal. There are 3 tables and 5 Soviet references.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: July 5, 1960.

Card 2/2

CHERNYAKOV, V A

85

PHASE I BOOK EXPLOITATION SOV/5556

Moscow. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Mezhvuzovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, G. N. Oyks, Professor, Doctor of Technical Sciences, and V. I. Yavoyskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

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New [Developments] in the Theory (Cont.) SOV/5556

COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal desulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Glinkov, B.P. Nam, V.I. Yavoyskiy, G.N. Oyks and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); N.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Povolotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Fomin (the Moscow "Serp i molot" Metallurgical Plant); V.A. Fuklev (Central Asian Polytechnic Institute)

Card 2/14

and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute). References follow some of the articles. There are 268 references, mostly Soviet.

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308620002-0"

CHERNYAKOV, V. A.

L 42972-65 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) JD
ACCESSION NR: AP5008709 S/0133/65/000/003/0232/0235

AUTHOR: Lubenets, I. A.; Zhukov, D. G.; Voinov, S. G.; Shalimov, A. G.; Kosoy, L. F.; Kalinnikov, Ye. S.; Chernyakov, V. A.; Yartsev, M. A.; Golikov, Ye. S.; Nysina, G. Ye

TITLE: Synthetic slag refining of steel from large-capacity arc ovens

SOURCE: Stal', no. 3, 1965, 232-235

TOPIC TAGS: steel refining, synthetic slag, ball bearing steel, chromium steel, low impurity steel, arc oven steel

ABSTRACT: During the second half of 1963; one of the electrical steel-smelting enterprises started introducing the refining of steel by means of synthetic lime-alumina slag into industrial use. The present article reports on the preliminary findings concerning the efficiency of this new process. Tests were carried out with a slag-melting OKB-284 oven having an interior diameter of 5350 mm and a 4500 kVA transformer. The wall and cover were made of chromomagnesite while the tank was lined with carbon blocks; the smelting chamber had a diameter of 3000 mm and was 800 mm deep. All pertinent construction and operational data are given

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ACCESSION NR: AP5008709

in considerable detail. Specifically, 1) the oven produced 2.5 metric tons/hr. of slag; 2) during production of ball-bearing and construction chromium steel, the slag consumption amounted to 2.8-5.0% of the mass of processed metal; 3) the oven consumed about 1420 kWh per metric ton of slag produced; 4) the shortened refining operation decreased the consumption of electrical energy by 30-40 kWh per metric ton of metal, which compensated fully for the energy requirements for the production of slag; and 5) the productivity of the large-capacity electrical ovens was increased by 10-15%. The new method markedly reduced (as shown in several tables presenting the results of impurity determinations) the amount of nonmetallic impurities and improved the plastic properties of the finished product. The technological procedures described should be able, in the future, to improve the quality of the above-mentioned special steels even more and reduce the impurity content even further. "In this work, carried out in conjunction with TsNIIChM, N. V. Keys, V. G. Pegov, Ye. B. Men'shenin, M. A. Barnovalov, G. B. Shirer, M. I. Shatalov, A. A. Molchanova, M. Ye. Anisimova, and others also took part." Orig. art. has: 5 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 001 OTHER: 000

Card 2/2

1. CHERNYAKOV, Ya. M.

2. USSR (600)

4. Mathematics-Study and Teaching

7. Work with pupils' speech in mathematics classes. Mat. v shkole. No. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

MUKHIN, N.; CHERNYAKOV, Ye.

Radio - Receivers and Reception

How to repair the volume control. Radio No. 5, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

CHERNYAKOV, Ye.I.

Conference of leading workers and engineering personnel of the synthetic rubber and synthetic alcohol industry. Khim. prom. no.1:60-62 Ja-F '56. (MLRA 9:7)
(Rubber, Synthetic) (Alcohol)

CHERNYAKOV, Yu., kandidat tekhnicheskikh nauk.

The advantage of propellers with turning blades for harbor and roadstead tugboats. Mor. flot 7 no.2:14-18 '47. (MLRA 9:6)
(Propellers) (Tugboats)

CHERNYAKOV, Yu.

PA 23/49T45

USSR/Engineering Oct 48
Propellers, Adjustable Pitch
Propellers, Ship

"Reverse Screw With Adjustable Pitch Blades,"
Yu. Chernyakov, Cand Tech Sci, 5 pp

"Morskoy Flot" No 10

Analyzes operation of subject propeller.

[redacted] 23/49T45

1. CHERNYAKOV, YU.
2. USSR (600)
4. Propellers
7. Designing propellers with regulable pitch, Mor. flot, 13, no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

CHERNYAKOV, Yu.N., kandidat tekhnicheskikh nauk.

Improved tugboat hull shapes. Rech.transp. 15 no.12:32 D '56.
(Tugboats)

CHERNYAKOV, Z.

"Russian geographers and travelers recommended reading list by G.P. Bogoiavlenskii. Reviewed by Z.Cherniakov. Geog. v shkole 20 no.3: 78 My-Je '57. (MLRA 10:6)
(Bibliography--Geographers) (Bibliography--Travelers)
(Bogoyavlenskii, G.P.)

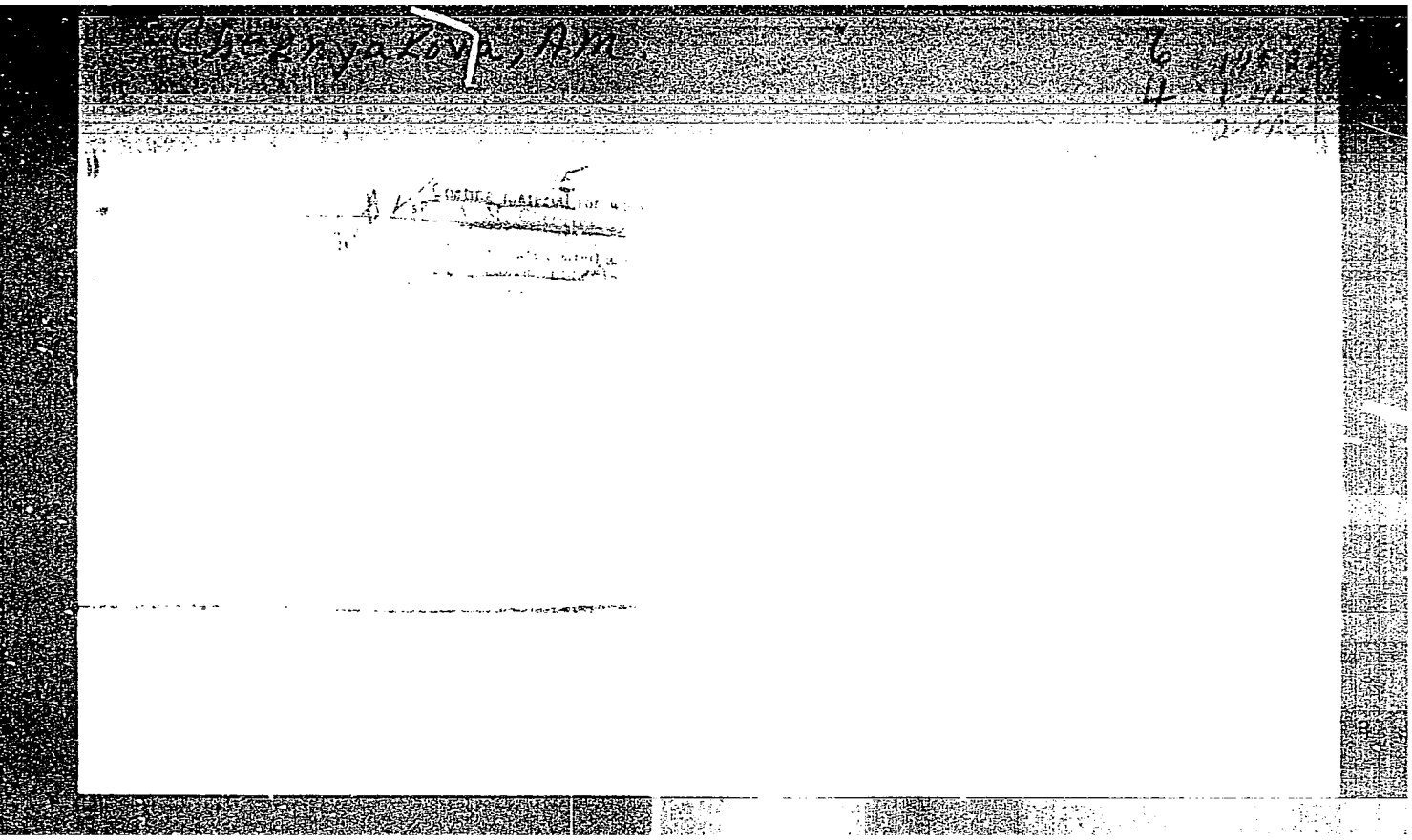
CHERNYAKOV, Z.G.

STASKEVICH, N.L.; MLODOK, B.I.; CHERNYAKOV, Z.G.; VOL'PE, G.S., redaktor; SMIRNOVA, V.A., tekhnicheskiy redaktor

[Municipal gas supply] Gazosnabzhenie gorodov. Leningrad, Gos. nauchno-tekhnicheskoe izd-vo neftianoi i gorno-toplivnoi lit-ry. Pt.2. [Automatic regulators and safety appliances] Avtomaticheskie pribory regulirovaniia i bezopasnosti. 1950. 179 p. (MLRA 8:2)
(Gas governors) (Gas--Safety appliances)

SCHASTNEV, P.N., CHERNYAKOV, Z.Ye.

What is the area of Asia? Geog.v shkole 19 no.5:62-64 S-O '56.
(Asia--Area measurement) (MLRA 9:11)



ACCESSION NR: AP3001577 S/0191/63/000/006/0021/0024

AUTHOR: Andrianov, K. A.; Chernyakova, A. M.

TITLE: Heat-stable STK-41 glass fiber laminate

SOURCE: Plasticheskiye massy, no. 6, 1963, 21-24

TOPIC TAGS: STK-41 glass fiber laminate, dielectric properties, electrically-insulating materials, organo-silicon resin K-41

ABSTRACT: The thermally-reactive organo-silicon resin K-41 (made by the condensation of hydrolysis products of equal molecular amounts of methyl- and phenyl-chlorosilanes; molecular weight 2030-2500) has high dielectric properties. Heat-stable STK-41 glass fiber laminate impregnated with K-41 also has high dielectric constants. The grade of glass laminate used affects dielectric properties: use of cloth containing less than 0.5% alkali sharply increases moisture stability of the textolite, thus working under conditions of tropical moisture is possible. K-41 can be used in the form of a lacquer (toluene solution) to impregnate various fillers, to prepare electrically-insulating materials. "The authors express thanks to E. M. Kuptsov for conducting chemical analysis on K-41 lacquer, and also to N. P. Orlov, N. D. Liventsov and Yu. V. Goncharenko for conducting electrophysical tests on K-41 lacquer and STK-41 glass fiber laminate." Orig. art. has: 5 figures,

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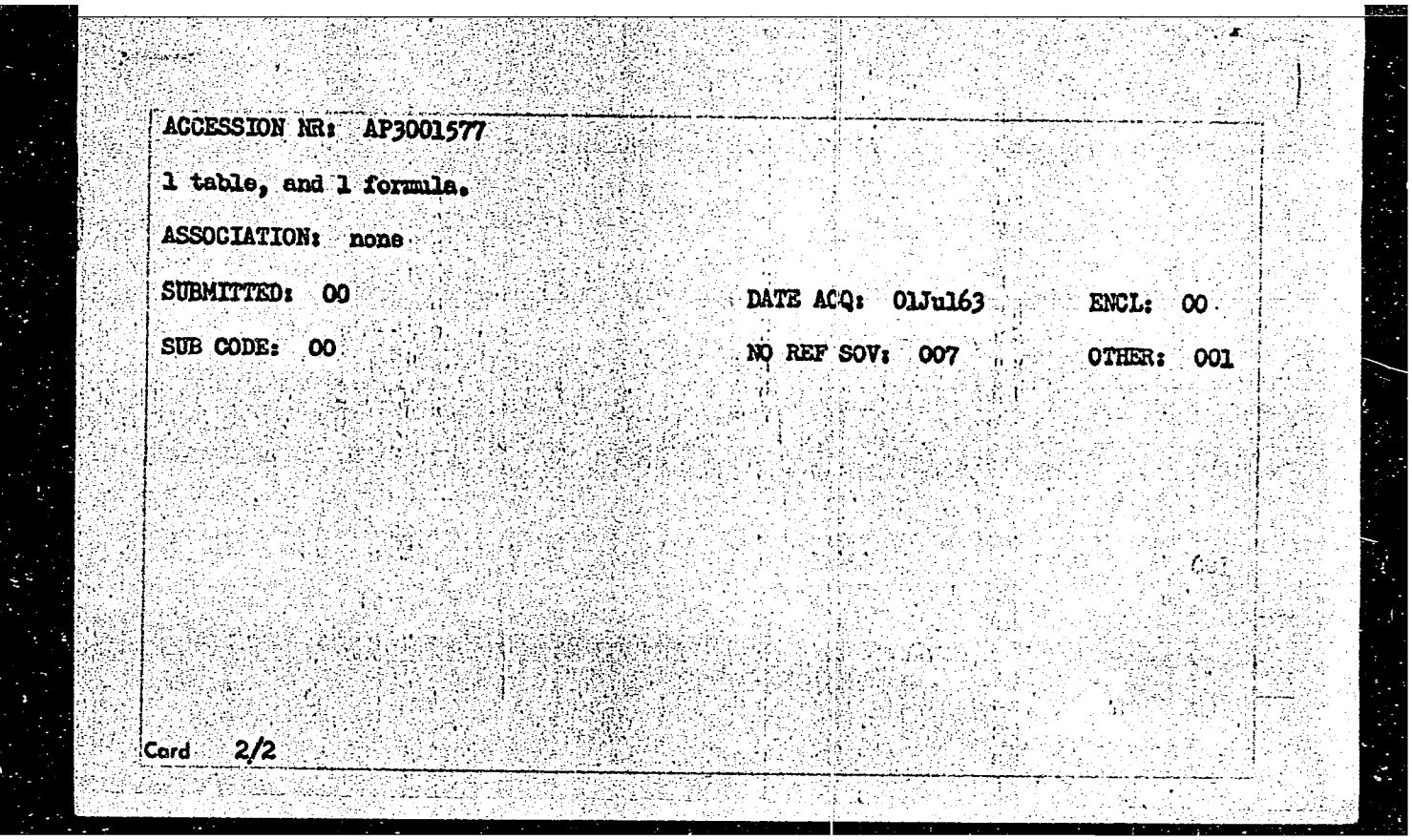

ACCESSION NR: AP3001577

1 table, and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 007 OTHER: 001

Card 2/2

L 51527-65 EWT(m)/EWP(j) Pc-4 RM

ACCESSION NR: AP5015314 UR/0286/65/000/009/0072/0072
678.842

14
B

AUTHOR: Chernyakova, A. M.; Dav, G. B.

TITLE: A method for producing a hardener and drying accelerant for organosilicon resins and resins of other types. Class 39, No. [illegible]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 72

TOPIC TAGS: organosilicon resin, polyethylene, polyamine, hardening agent, drying agent

ABSTRACT: This Author's Certificate introduces a method for producing a polyethylenpolyamine-based hardener and drying accelerant for organosilicon resins and resins of other types. A more effective hardener is produced by interacting ethylenpolyamine zinc caprolate with the application of heat.

ASSOCIATION: none

SUBMITTED: 09Jan64 ENCL: 00 SUB CODE: GC, MT

NO REF SOV: 000 OTHER: 000

Card 1/1

CHERNYSHEV, M.P.; ROZHKOV, L.P.; SHUL'GINA, Ye.F.; IGNATOVICH, A.F.; LABUNSKAYA, L.S.; FOMINA, T.V.; CHERNYAKOVA, A.P.; SHPAKOVA, L.N.; TARASOVA, M.K.; ANFILATOVA, A.I.; SLAVIN, L.B.; BARYSHEVSKAYA, G.I.; DERIGLAZOVA, N.V.; MATUSHEVSKIY, G.V.; AL'TMAN, E.N.; KROPACHEV, L.N.; CHEREDILOV, B.F.; POTAPOV, A.T.; DUDCHIK, M.K.; REGENTOVSKIY, V.S.; YERMAKOVA, L.F.; SEMENOVA, Ye.A.; KULIKOVSKIY, I.I.; KIRYUKHIN, V.G.; AKSENOV, A.A., red.; NEDOSHIVINA, T.G., red.; SERGEYEV, A.N., tekhn. red.; BRAYNINA, M.I., tekhn. red.

[Hydrometeorological handbook of the Sea of Azov] Gidrometeorologicheskii spravochnik Azovskogo moria. Pod red. A.A.Aksenova. Leningrad, Gidrometeoizdat, 1962. 855 p. (MIRA 16:7)

1. Gidrometeorologicheskaya observatoriya Chernogo i Azovskogo morey.

(Azov, Sea of--Hydrometeorology)

L 54532-65 EWT(1)/FCC GW

ACCESSION NR: AR5014443 UR/0169/65/000/005/B106/B106
551.553 (262.54)

SOURCE: Ref. zh. Geofizika, Abs. 5B591

AUTHOR: Chernyakova, A.P.

TITLE: Strong winds on the Sea of Azov

CITED SOURCE: Sb. rabot Gidrometeorol. observ. Chern. i Azovsk. morey. vyp. 2, 1964, 100-112

TOPIC TAGS: climatology, wind velocity, strong wind, wind intensification

TRANSLATION: A study has been made of the regime characteristics of winds with velocities of 15 m/sec and greater. The study was based on a 15-year period of wind observations (1946-1960) using data for 10 marine hydrometeorological stations and also shipboard wind observations in the open part of the sea for a 10-year period (1947-1956). One case of a strong wind was considered to be [illegible] there were brief slackenings of velocity (for not more than three hours). [illegible] tion of the squall type was not taken into account. Strong winds are observed annually in the Sea of Azov as follows: 18-27 cases in the northeastern part of the sea and 10-17

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ACCESSION NR: AR5014443

cases in the southwestern part of the sea per year. Strong winds occur most frequently in the cold season of the year. There is a predominance of strong winds of easterly directions, but in June-August the directions are southwesterly and westerly. The maximum wind velocity in the cold season of the year is 24-30 m/sec, whereas in the warm season of the year it does not exceed 20 m/sec. The maximum continuous duration of a strong wind is in December and totals 170-230 hours in the north and 130-135 hours in the south. T. Terent'yeva

SUB CODE: ES ENCL: 00

Card 2/2